FIG. 1

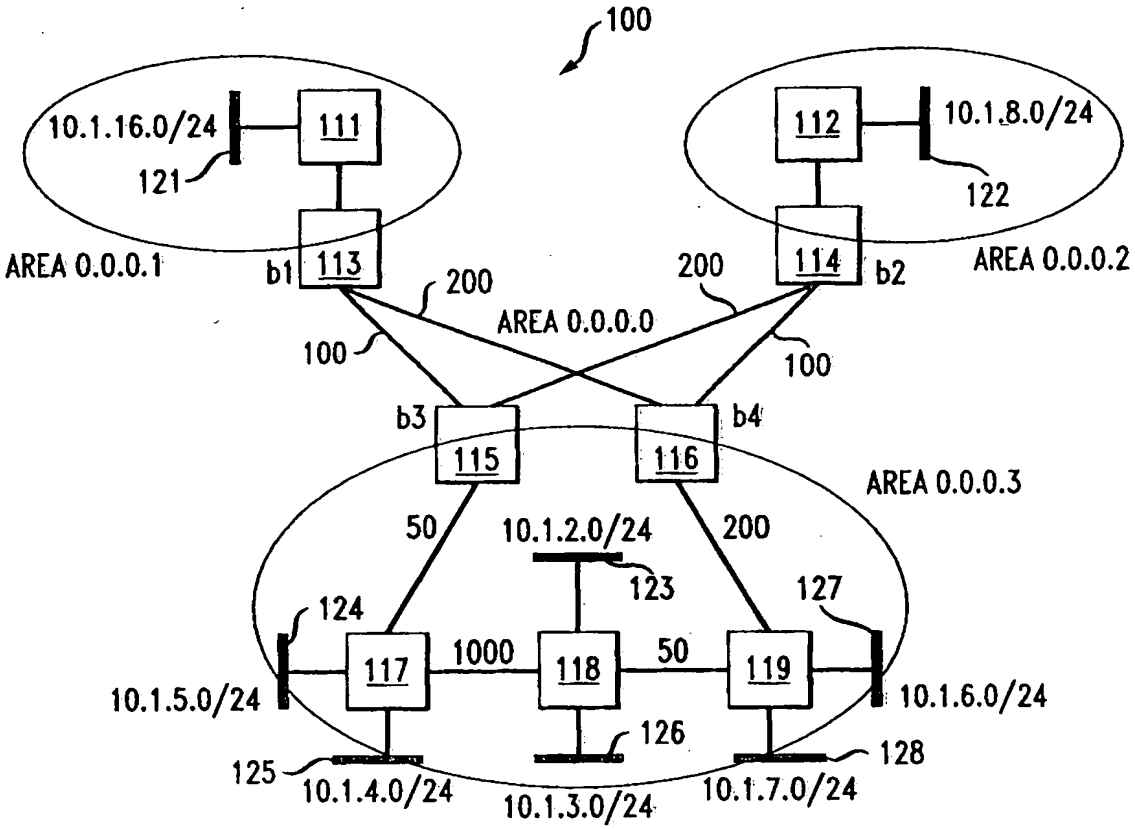

100
10.1.16.0/24
111
121
AREA 0.0.0.1
b1
113
200
100
112
10.1.8.0/24
122
200
114
b2
AREA 0.0.0.2
AREA 0.0.0.0
b3
115
116
b4
AREA 0.0.0.3
50
10.1.2.0/24
123
200
124
127
117
1000
118
50
119
10.1.5.0/24
10.1.6.0/24
126
125
128
10.1.4.0/24
10.1.3.0/24
10.1.7.0/24

FIG. 2

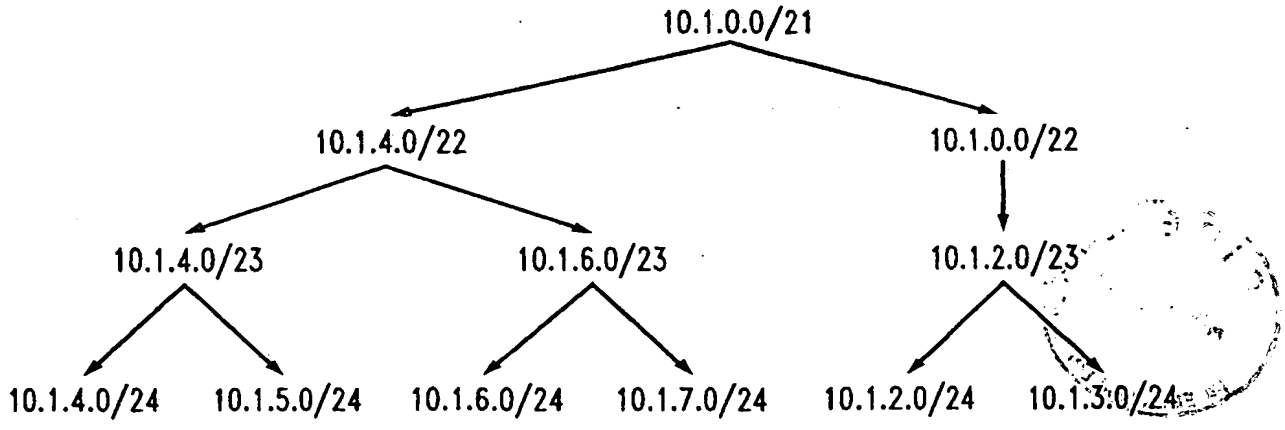

10.1.0.0/21
10.1.4.0/22
10.1.0.0/22
10.1.4.0/23
10.1.6.0/23
10.1.2.0/23
10.1.4.0/24
10.1.5.0/24
10.1.6.0/24
10.1.7.0/24
10.1.2.0/24
10.1.3.0/24

FIG. 3

```
procedure COMPUTEMINERROR(Aggregate x, Aggregate y, integer l)
if subTree[x, y, l].computed = true
  return [subTree[x, y, l].error, subTree[x, y, l].aggregates]
  minError := minError1 := minError2 := ∞
if x is a leaf {
  minError1 := Σ_{s∈S} D(s, t) * (lsp(s, x, {y}, W_A) - lsp(s, x))
  if l > 0
    minError2 := Σ_{s∈S} D(s, t) * (lsp(s, x, {x}, W_A) - lsp(s, x))
  if minError1 ≤ minError2
    [subTree[x, y, l].error, subTree[x, y, l].aggregates] := [minError1, Ø]
  else
    [subTree[x, y, l].error, subTree[x, y, l].aggregates] := [minError2, {x}]
}
if x has a single child u {
  [minError1, aggregates1] := COMPUTEMINERROR(u, y, l)
  if l > 0
    [minError2, aggregates2] := COMPUTEMINERROR(u, x, l - 1)
  if minError1 ≤ minError2
    [subTree[x, y, l].error, subTree[x, y, l].aggregates] := [minError1, aggregates1]
  else
    [subTree[x, y, l].error, subTree[x, y, l].aggregates] := [minError2, aggregates2 ∪ {x}]
}
if x has children u and v {
  for i := 0 to l {
    [minError1, aggregates1] := COMPUTEMINERROR(u, y, i)
    [minError2, aggregates2] := COMPUTEMINERROR(v, y, k - i)
    if minError1 + minError2 < minError
      minError := minError1 + minError2
      aggregates := aggregates1 ∪ aggregates2
  }
  for i := 0 to l – 1 {
    [minError1, aggregates1] := COMPUTEMINERROR(u, x, i)
    [minError2, aggregates2] := COMPUTEMINERROR(v, x, k - i - 1)
    if minError1 + minError2 < minError
      minError := minError1 + minError2
      aggregates := aggregates1 ∪ aggregates2 ∪ {x}
  }
  [subTree[x, y, l].error, subTree[x, y, l].aggregates] := [minError, aggregates]
}
subTree[x, y, l].computed := true
return [subTree[x, y, l].error, subTree[x, y, l].aggregates]
```

FIG. 4

```
procedure COMBINEMINERROR()
for i = 1 to m
  for j = 0 to k {
    Ti[j].[error, aggregates] := COMPUTEMINERROR(r(Ti), ∈, j)
    Xi[j].[error, aggregates] := [∞, Ø]
  }
for j = 0 to k
  X1[j].[error, aggregates] := T1[j].[error, aggregates]
for i = 1 to m
  for j = 0 to k
    for l = 0 to j
      if (Xi-1[l].error + Ti[j - l].error < Xi[j].error) {
        Xi[j].error = Xi-1 [l].error + Ti[j - l].error
        Xi[j].aggregates = Xi-1[l].aggregates ∪ Ti[j - l].aggregates
      }
```

FIG. 5

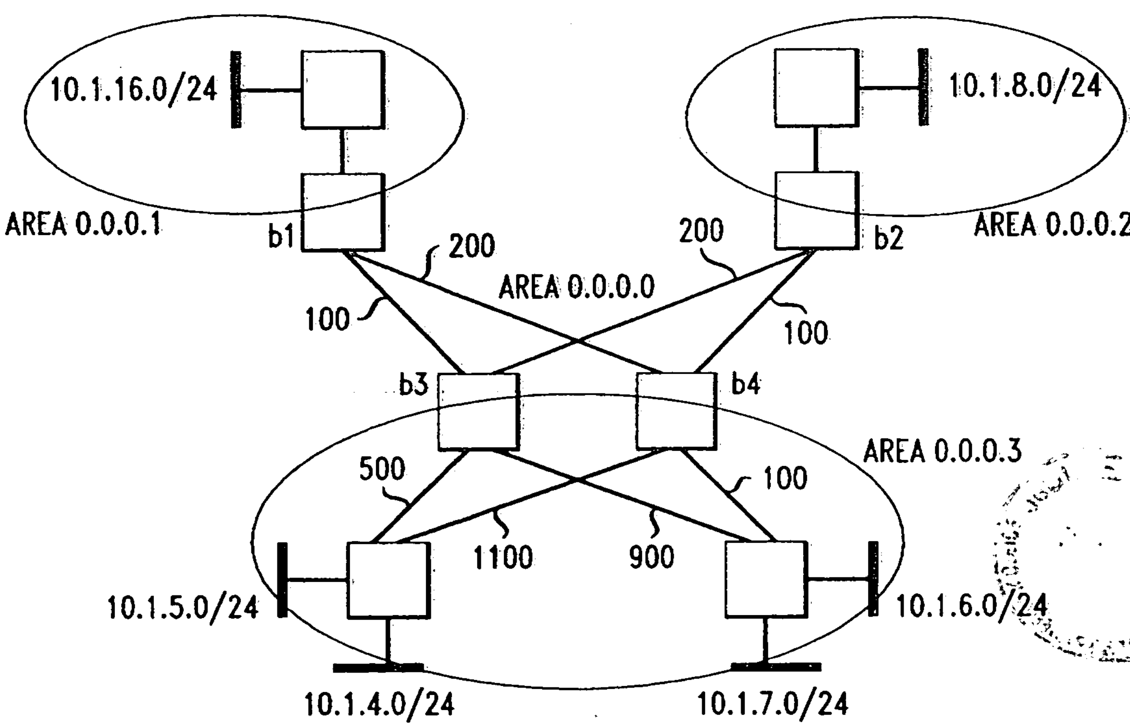


FIG. 6

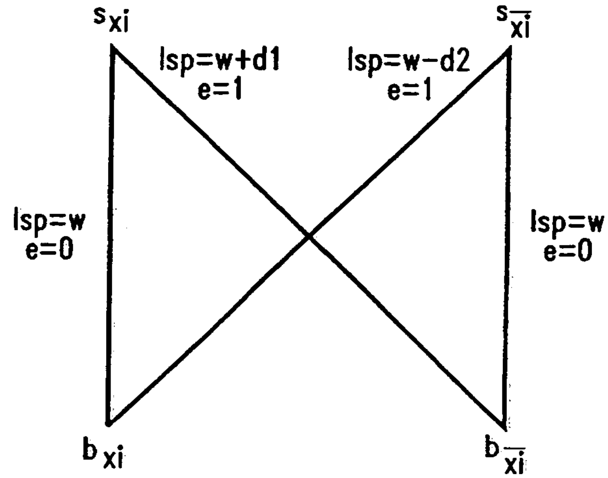
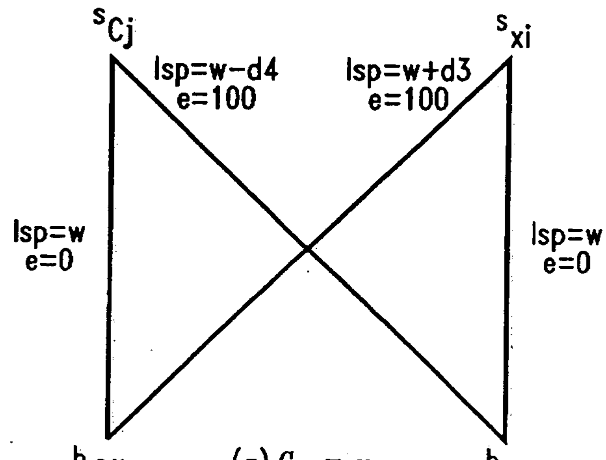
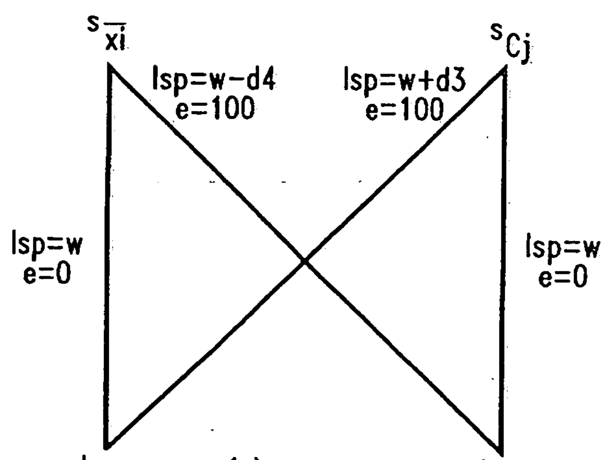


FIG. 7A



(a) $C_{jl} = x_i$

FIG. 7B



(b) $C_{jl} = \bar{x}_i$

FIG. 8

```
procedure COMPUTEWEIGHTSCUMULATIVE ()
1.  for each b ∈ B_i set W_min(b) := 0
2.  for i :=1 to r {
3.    W := W_min
4.    Choose a random subset R ⊆ B_i of ABRs
5.    for each b ∈ R set W(b) to a random weight in [0, L]
6.    if Σ_{s∈S} e(s, B(s, W)) < Σ_{s∈S} e (s, B(s, W_min))
7.      W_min := W
8.  }
9.  return W_min
```

FIG. 9

procedure ComputeWeightsMax(Q)
1.for each b ∈ B_i set Wold(b) := 0
2. while (Pb_2B

i Wold(b) ≤ (

j B_i j*(j B_i j-l)

2) *lspmax) f3. Let

Q0 be a new set of inequalities that result when the value Wold(b) is substituted for each variable W (b)only on the LHS of each inequality in Q 4. Set Wnew(b) to the smallest possible value such that each inequality in Q0 is satisfied when Wnew(b) is substituted for variable W (b) in Q0 5. if Wnew= Wold 6. return Wnew 7. else 8. Wold := Wnew 9.g 10. return "there does not exist a weight assignment W"

FIG. 10

```
procedure COMPUTEWEIGHTSTWOABR()
1.  Set V_opt := v(s_1), E := E_opt := Σ_{s∈S} e(s, b_1)
2.  for j:=1 to n {
3.    E := E + e(s_j, b_2) - e(s_j, b_1)
4.    if E < E_opt
5.      V_opt := v(s_{j+1}), E_opt := E
6.  }
7.  return V_opt
```